

## REMARKS

Upon entry of the present amendment claims 1-12 and 17-29 are pending in the application. Claim 10 has been amended and claim 29 has been added, both in accordance with the requirements of U.S. patent practice. Applicants respectfully request entry of this amendment.

New claim 29 has been drafted to more specifically claim the invention. In particular, claim 29 recites the multicomponent system of claim 19, wherein a clearcoat formed therefrom has a change in gloss of no greater than 12.0 according to DIN 67530; a cross-cut index of GT 0 or GT 1 according to DIN ISO 2409:1994-10; and a blister index of m 2/ g 1 or better after being subjected to 3 days of aging in a constant condensation climate according to DIN 500017 and 53209. Support for this amendment can be found at least on p. 47, l. 25 to p. 48, l. 18.

Amendments to, and additions to, the claims, as set forth above, are made in order to streamline prosecution in this case by limiting examination and argument to certain claimed embodiments that presently are considered to be of immediate commercial significance. Amendment of the claims is not in any manner intended to, and should not be construed to, waive Applicants' right in the future to seek such unamended subject matter, or similar matter (whether in equivalent, broader, or narrower form) in the present application, and any continuation, divisional, continuation-in-part, RCE, or any other application claiming priority to or through the present application, nor in any manner to indicate an intention, expressed or implied, to surrender any equivalent to the claims as pending after such amendments or cancellations.

Reconsideration is respectfully requested in view of the foregoing amendment and the following remarks.

### 1. Allowable Claim

Applicants thank the PTO for the allowance of claim 10 provided it is rewritten in independent form including all to the limitations of the base claim and any intervening claims. Claim 10 has been rewritten in independent form, incorporating all the limitations of claim 1. However the remaining claims are believed to be allowable on other grounds set forth below.

2. **Rejection of claims 1-9, 11-12, 17-18, 20-23, and 25-26 under 35 U.S.C. §103(a) as obvious over Nienhaus et al., WO 02/31071, using U.S. Patent No. 6,903,145 as the English translation, hereafter “Nienhaus” in view of Ohrbom et al., EP 0915113, hereafter “Ohrbom”.**

The PTO states (p. 2, third full para.) that Nienhaus teaches a multicomponent system comprising (A) at least one component comprising at least two isocyanate-reactive functional groups, (B) one component containing a polyisocyanate, and (C) a component comprising at least two constituents which are curable with actinic radiation. Preferred compounds are, for component A, meth(acrylate) copolymers containing hydroxy groups and, for component C, dipentaerythritol pentaacrylate. The composition may further comprise amino resin crosslinking agents such as those taught in “Carbamylmethylated Melamines,” mentioned in col. 5, ll. 20-35 of Nienhaus. The PTA alleges that the amino resin crosslinking agents are the same as referenced in the instant application and are, therefore, assumed to meet all of the claimed limitations.

The PTO concedes (para. spanning pp. 2 and 3) that Nienhaus does not teach a component comprising at least two allophanate or carbamate groups.

Ohrbom is therefore cited for teaching a dual cure system comprising a compound having a hydroxyl functionality and carbamate functionality, either in separate polymers or the same polymer, and an aminoplast crosslinker.

The PTO alleges that it would have been obvious to have used compounds having carbamate functionality, as taught by Ohrbom, in the invention of Nienhaus, in order to provide rheology control and environmental etch resistance in systems curing also through crosslinking of hydroxy groups with polyisocyanate crosslinkers, as disclosed in Ohrbom in col. 2, ll. 5-10 (3/25/2009 Office Action, p. 3, first para.).

Applicants greatly appreciate the detailed basis of rejection, but must respectfully disagree.

The present claims are directed to a multicomponent system comprising, in a first component, (A) at least one oligomer, polymer, or combination thereof, comprising on average at least two allophanate groups, carbamate groups or at least one carbamate group and at least one allophanate group, and (B) at least one oligomer, polymer, or combination thereof, comprising on average at least two isocyanate-reactive functional groups, (C) at least one partly or fully alkylated amino resin comprising N-methylol ether groups or N-methylol and N-methylol ether groups, and (D) at least one compound comprising on average at least two groups which can be activated with actinic radiation, selected from the group consisting of pentaerythritol tetraacrylate, dipentaerythritol pentaacrylate, aliphatic urethane acrylates having six acrylate groups in the molecule, and a combination thereof. The second component of the multicomponent system comprises a polyisocyanate.

Such multicomponent systems can be cured thermally and with actinic radiation. As demonstrated in Example 1, pp. 44-46, of the present application, such a triple cure mixture has an advantageously long processing time or pot life and is easy to apply. As demonstrated in Example 2, on pp. 46-49, the triple-cure mixture in Example 1, when used as a clearcoat material to produce a multicoat color paint system, exhibits after curing thermally and by UV radiation, particularly good leveling, a gloss of 88.8, very high scratch resistance, and very good wetting and intercoat adhesion. Furthermore, the clearcoat exhibits condensation resistance (p. 48, ll. 11-18), desirable hardness (p. 48, ll. 20-24), and favorable chemical resistance (p. 48, l. 26, to p. 49, l. 2).

At the time the invention was made, the skilled person in the art would not be motivated to use compounds having carbamate-functional compounds, as taught by Ohrbom, in the invention of Nienhaus. The lack of motivation arises because environmental etch resistance and rheology control, the advantages arising from the use of carbamate-functional compounds in the composition of Ohrbom, are inherent in the compositions of Nienhaus without any modification.

The Supreme Court has recently reaffirmed the principle that “a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the art”. *KSR Int'l. Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007).

The Court further stated that “it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does”. *Id.* And the Court expressly encouraged the use of common sense in such analysis. *Id.*

In addition, “The consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that [the proposed modification] should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art.” *In re Dow Chemical Co.*, 837 F.2d 469, 473 (Fed. Cir. 1988). “Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure.” *Id.*

Moreover, the Federal Circuit Court has held that “[o]bviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination.” *In re Geiger*, 815 F.2d at 687-88, 2 U.S.P.Q. 2d at 1277-78. In this case, Appellants claimed a method of inhibiting scale formation on and corrosion of metallic parts in cooling water systems by use of compositions containing (1) a copolymer of sulfonated styrene/maleic anhydride (SSMA); (2) a water soluble zinc compound; and (3) an organo-phosphorus acid compound or water soluble salt. The collective prior art taught using each of these three components, separately or in a combination falling short of that claimed, for treating cooling water systems. The Board held it *prima facie* obvious to combine the three components together for their known functions and to optimize the amount of each.

The Federal Circuit reversed the Board, emphasizing that “[o]bviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination.” *Id.* at 688, 2 U.S.P.Q. 2d at 1278. The court then proceeded to go through each of the references relied on showing why, absent hindsight, the skilled artisan would not have found it obvious to make the claimed composition. While acknowledging that combining the three components of the claimed composition may have been obvious to try, the court stated it does not constitute the standard for combining references under § 103. *Id.*

The first rationale provided by the PTO for combining the carbamate-functional compounds of Ohrbom with Nienhaus is improved environmental etch resistance. The motivation for using carbamate-functional compounds is evident from the problems in the art cited by Ohrbom (§ 5, ll. 33-35):

Coatings from acrylic resins cured only with the alkyl-etherified melamine resin have poor resistance to acid rain deterioration, while such coatings cured [with] only blocked polyisocyanates have good acid resistance but poor low-temperature cure and workability.

Also (§ 6, ll. 41-43):

Both the Hartmann and the Pham references teach hydroxy-functional resins cured with mixtures of melamine and isocyanate. Again, the coating compositions of these references form coatings with a substantial amount of ether linkages and thus will show significant deterioration from acid rain etching.

The skilled person in the coatings arts knows that the ether linkages that form from the reaction of amino resins with hydroxy-functional polymers are sensitive to acid rain, while the carbamate linkages formed by the reaction of hydroxy-functional polymers with polyisocyanates are not. In general, carbamate linkages, regardless of how they are formed, are more stable to acid rain than the ether linkages.

The compositions of Nienhaus are essentially two component (2K) systems comprising constituent A1, having hydroxy groups, and constituent B, a polyisocyanate. Reaction of A1 and B during cure results exclusively in carbamate linkages. Since carbamate linkages are already present in the cured coating composition of Nienhaus, there is no motivation to add additional carbamate-functional constituents. Not only is there lack of motivation, but there is no expectation of success, i.e. no further improvement in environmental etch can be expected from the introduction of additional carbamate-functional constituents in the composition of Nienhaus.

The second rationale provided by the PTO for combining the carbamate-functional compounds of Ohrbom with Nienhaus was rheology control. This problem pertains specifically to

coating compositions with blocked polyisocyanates, and is summarized by Ohrbom (§ 4, ll. 25-31, and § 3, ll. 22-24):

Difficulties with controlling rheology have been a problem particularly with coatings compositions that are cured using blocked polyisocyanates as crosslinkers. Although coating compositions using [blocked] polyisocyanate crosslinkers are highly preferred for the excellent appearance and durability of the films they produce, such systems must usually be heated to temperatures of 290°F (143°C) and higher in order to de-block the polyisocyanate and thereby initiate cure. At these temperatures, the tendency of the low molecular weight principal resins to flow is increased. Thus, the coating composition flows more than is desirable before there is sufficient crosslinking to set up the coating film. The excessive flow leads to the appearance problems in the cured coating mentioned above [excessive flow on the coated substrate causing sagging, slumping, so-called fat edges, and other appearance problems before the coating has achieved a sufficient level of cure to prevent further movement].

In brief, the high curing temperature required for blocked polyisocyanates results in excessive flow of the coating before cure.

This problem is also addressed by Ohrbom by adding carbamate-functional compounds. These compounds react with the amino resins at lower temperatures to provide enough crosslinking during the early stages of cure to prevent the flow problems described above (§ 66, ll. 43-45):

It is also preferred that the amounts of the components of the coating composition are selected so that the carbamate-functional compound and the aminoplast crosslinking agent are reacted to a sufficient extent during curing to prevent sagging of the coating and other flow-related costing defects.

In contrast to the coatings of Ohrbom, the coatings of Nienhaus are 2K systems with polyisocyanates, not blocked polyisocyanates, as crosslinking agents. As such, the curing temperatures are considerably less than those of Ohrbom's compositions. In Nienhaus, thermal curing is effected at room temperature, or at temperatures >40°C, preferably >50°C (col. 13, ll. 20-23). Although the recited temperature ranges are open-ended, the skilled person in the

coatings art knows that polyisocyanate-based coatings are considered "low temperature cure" coatings, and significantly higher temperatures than about 60-80°C are rarely used in practice. The cure conditions given in the Examples of Nienhaus are telling: 60°C for 15 minutes (col. 16, ll. 3-4), not "290°F (143°C) and higher" as taught by Ohrbom for coatings cured with blocked polyisocyanates.

In the present Application, the crosslinking agents are also primarily polyisocyanates, not blocked polyisocyanates. In Example 1, component (II) is a mixture of two polyisocyanates, isophorone diisocyanate and hexamethylene diisocyanate (p. 44, ll. 9-16 of Application as filed). The cure conditions are "room temperature for 5 minutes and 80°C for 10 minutes" (p. 47, l. 13-14). There is a post-cure of 140°C for 20 minutes, but at this point the coating is sufficiently cured that rheology problems are not possible.

Since the compositions of Nienhaus are cured with polyisocyanates, not blocked polyisocyanates, and the initial stages of cure take place at room temperature to 80°C, rheology control is not an issue. No rheology problems are reported by Nienhaus, and the skilled person in the coatings art does not expect any rheology control problems at the relatively low cure temperatures employed. Therefore, there is no motivation to add the carbamate-containing compounds of Ohrbom to the coating compositions of Nienhaus. Moreover, there can be no expectation of success, i.e. improved rheology control, when rheology control is not a problem to begin with.

The present Application does allow, in an unpreferred embodiment, that the polyisocyanate may be partly blocked (p. 30, ll. 2-3). However (p. 30, ll. 4-7):

The blocked isocyanate groups, however, should be present only in minor amounts, preferably only up to 50 equivalent%, based on the isocyanate groups present in the polyisocyanate (E). . . . It is essential that there are still sufficient free isocyanate groups for crosslinking by way of the isocyanate-reactive functional groups in component (I).

With a maximum of 50 equivalent% of the isocyanate groups blocked, at least 50 equivalent% of free isocyanate groups remain for crosslinking with the hydroxyl-functional oligomer and/or polymer. In this way, the initial cure temperatures can

be kept low (room temperature to 80°C as taught in the Example) and rheology control is provided in the early stages of curing despite the presence of some blocked isocyanate groups.

The PTO alleges that the composition of Nienhaus:

may further comprise amino resin crosslinking agents such as those taught in "Carbamylmethylated Melamines," mentioned in column 5, lines 20-35 of Nienhaus. The Office Action notes that the amino resin crosslinking agents are the same as referenced in the instant application and are, therefore, assumed to meet all of the claimed limitations.

Nienhaus does not teach or fairly suggest that amino resins should be used in combination with the other constituents. Nienhaus only teaches that "the multicomponent system may further comprise customary and known additives in effective amounts" (col. 4, ll. 39-41), provides a list of clearcoat raw materials known to those skilled in the art (col. 4, ll. 44-57), and in a separate section, describes amino resins (col. 5, ll. 21-35). Nowhere does Nienhaus suggest the desirability of, or any advantage to be gained from, using amino resins in combination with the coating constituents taught therein.

The U.S. Court of Customs and Patent Appeals has held that "[i]t is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one skilled in the art". *In re Wesslau*, 353 F.2d at 241, 147 U.S.P.Q. at 393.

Nienhaus teaches (A) at least one component comprising at least two isocyanate-reactive functional groups, (B) one component containing a polyisocyanate, and (C) a component comprising at least two constituents which are curable with actinic radiation. When Nienhaus teaches that "the multicomponent system may further comprise customary and known additives in effective amounts", he is merely suggesting that any known coating raw material may be added to the inventive composition therein, provided "the additives do not inhibit or prevent entirely the dual-cure crosslinking reactions" (col. 4, ll. 41-43). The skilled person in the art will not conclude



that Nienhaus fairly suggests that amino resins should be used in combination with constituents (A), (B), and (C). It appears that the PTO has selected the reference to amino resins, to support its position, to the exclusion of other parts necessary to the full appreciation of what this reference fairly suggests to one skilled in the art.

The skilled person in the art would not be led to combine the compounds having carbamate functionality, as taught by Ohrbom, with the invention of Neinhaus, because Ohrbom teaches a 1-component (1K) coating system, and Neinhaus teaches a 2-component (2K) coating system. The skilled person in the art knows that a one-component (1K) coating system is stable upon storage, i.e. it has a long "pot life" with all the constituents present. Ohrbom teaches (¶ 55)

The polyisocyanate crosslinking agents are preferably blocked with compounds such as phenols, caprolactam, low molecular weight oximes such as acetone oxime, methyl ethyl ketoxime, cyclohexanone oxime, acetophenone oxime, and so on, that will allow the polyisocyanate crosslinking agent to be formulated into a stable composition.

In the Examples, six different crosslinkers are used (Table I, ¶ 71). Each crosslinker is a blocked polyisocyanate. Nowhere in Ohrbom is there mention of 2-component systems. Ohrbom fairly suggests to the skilled person in the art the use of blocked polyisocyanates in one-component coating systems.

Nienhaus, on the other hand, teaches a 2K coating system comprising (A) and (B). A third component (C) is also added (col. 7, ll. 40-43): "... component (A) and/or component (B) are mixed shortly prior to their mixing, before application, with at least one further liquid component (C)". The important point is that (A) and (B) must be mixed just prior to application, whether component (C) is added to component (A), to component (B) or to both, because the polyisocyanate in (B) will begin reacting with the isocyanate-reactive constituent in (A) upon mixing. Moreover, Nienhaus is silent on blocked polyisocyanates.

Since Ohrbom teaches a 1K system, which is a "stable composition", and Nienhaus teaches a 2K system in which (A) and (B) are mixed just prior to application, the skilled person in the art would not be motivated to combine elements from the fundamentally different teachings of these two references.

In summary, at the time the invention was made, the skilled person in the art would not be motivated to use compounds having carbamate functionality, as taught by Ohrbom, in the compositions of Nienhaus. The lack of motivation arises because environmental etch resistance and rheology control, the advantages arising from the use of carbamate-functional compounds in the composition of Ohrbom, are inherent in the compositions of Nienhaus without any modification. Moreover, not only is there a lack of motivation to combine the references, but there no expectation of success in doing so. No further improvement in environmental etch and rheology control can be expected from the introduction of additional carbamate-functional constituents to the composition of Nienhaus because these properties are already inherently present. Moreover, Ohrbom and Nienhaus teach 1K and 2K coating systems, which are fundamentally different, so the skilled person would not be motivated to combine elements from these two references.

Since neither motivation to combine Ohrbom and Nienhaus, nor an expectation of success in doing so, have been established, Applicants respectfully submit that a *prima facie* case of obviousness has not been made. Claim 1 is therefore believed to be patentable over Nienhaus in view of Ohrbom. Accordingly, reconsideration and removal of the obviousness rejection of claim 1 is requested.

Applicants appreciate the additional grounds of rejection of claims 2-9, 11-12, 17-18, 20-23, and 25-26. However, these claims each depend from, and thereby incorporate, all the limitations of independent claim 1, which is believed to be patentable on the foregoing grounds. Therefore Applicants respectfully submit that these claims are likewise patentable. Accordingly, reconsideration and removal of the obviousness rejection of these claims is also requested.

3. **Rejection of claims 19, 24, and 27-28 under 35 U.S.C. §103(a), as obvious over Nienhaus et al., WO 02/31071, using U.S. Patent No. 6,903,145 as the English translation, hereafter “Nienhaus” in view of Ohrbom et al., EP 0915113, hereafter “Ohrbom” as applied to claims 1-9, 11-12, 17-18, and 20-23 above, and further in view of Blum et al., WO 02/02704, using U.S. Patent No. 6,803,393 as the English translation, hereafter “Blum”.**

Nienhaus and Ohrbom are discussed in the preceding section.

Blum generally discloses a multicomponent system curable thermally and with actinic radiation, comprising (A) an isocyanate-reactive binder comprising: (A1) 1-60% by weight of at least one unsaturated polyester having at least 2 isocyanate reactive groups (Abstract and col. 5, ll. 59-64); (A2) 1-50% by weight of at least one binder different than (A1) having a least two isocyanate reactive groups (Abstract and col. 9, ll. 1-7); and (A3) 1-50% of at least one binder different than (A1) having at least one isocyanate reactive group and at least one double bond (Abstract and col. 9, ll. 1-7).

The PTO alleges "Nienhaus et al. teaches the basic claimed composition as set forth above". Applicants must respectfully disagree. By the PTO's own earlier admission, "Nienhaus does not teach a component comprising at least two allophanate or carbamate groups" (sentence spanning pp. 2 and 3 of the Office Action dated 3/25/09), which corresponds to element (A) in the cited claims.

The PTO alleges "In addition, Nienhaus teaches the polyisocyanate containing component comprising from 20-80% by weight of polyisocyanate (7:35-40)." The PTO concedes however that "Nienhaus does not teach the other claimed weight percentages."

The PTO further alleges,

However, Blum et al, teaches multicomponent systems comprising (A3) 1 to 50% by weight isocyanate reactive polymers having actinic groups (9:1-17), (A2) 1 to 50% by weight isocyanate reactive polymer/oligomers (9:1-17), (A1) 1 to 60% by weight actinic group containing compound (5:59-64), and 1 to 50% by weight of amino resin and isocyanate crosslinking agents (14:12-27). Nienhaus and Blum are combinable because they are from the same filed of endeavor, namely multicomponent dual-cure systems. At the time of the invention a person of ordinary skill in the art would have found it obvious to have used the weight percentages, as taught by Blum, in the invention of Nienhaus, in order to effectively crosslink the composition.

Applicants greatly appreciate the detailed basis of rejection, but must respectfully disagree. First of all, Blum does not teach “1 to 50% by weight of amino resin and isocyanate crosslinking agents . . .” in the cited passage (14:12-27). Instead, Blum addresses in that passage “The amount of the polyisocyanates (B1) and/or (B2) for use in accordance with the invention,” not the amount of amino resin and isocyanate. Therefore Blum does not teach all of the concentration ranges, in particular the concentration range for element (C), of claims 19 and 27-28.

Secondly, the PTO implies that the sole rationale for combining Nienhaus and Blum is that they are from the same field of endeavor. However this rationale is a necessary, but not sufficient, basis for combining references. The Federal Circuit Court has held that “[o]bviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination.” *In re Geiger*, 815 F.2d at 687-88, 2 U.S.P.Q.2d at 1277-78.

Thirdly, the PTO has presumed that Nienhaus and Ohrbom can also be combined to establish a *prima facie* case of obviousness. The Applicant has traversed this assumption in the foregoing section by showing that the motivations of environmental etch resistance and rheology control allegedly provided by Ohrbom are already inherently present in the composition of Nienhaus, and that there is no expectation of success in improving these properties which are already present.

Finally, even if there were motivation to combine Nienhaus, Ohrbom, and Blum, which is not at all conceded, this combination of references does not teach all the concentration ranges cited in the claims. In particular, as mentioned above, Blum does not teach concentration ranges for element (C), partly or fully alkylated amino resin comprising N-methylol and/or N-methylol ether groups. Nor does Blum teach in particular element (D), i.e. pentaerythritol tetraacrylate, dipentaerythritol pentaacrylate, and aliphatic urethane acrylate having six acrylate groups as required by claims 19, 24, and 27-28.

The PTO alleges, “Considering claim 24: Nienhaus et al. teaches the basic claimed composition as set forth above.” The PTO concedes “Nienhaus does not teach the claimed weight ratio.” Emphasis added:

However, Blum et al, teaches using 1 to 50% by weight of crosslinking agents (14:16-28). At the time of the invention a person of ordinary skill in the art would have found it obvious to have used the weight ratio, as taught by Blum, in the invention of Nienhaus, in order to effectively crosslink the composition.”

As mentioned above Blum teaches 1 to 50% by weight polyisocyanate, not the total amount of polyisocyanate and amino resin crosslinker. Even if Blum did teach 1 to 50% by weight total crosslinking agents, including polyisocyanate and amino resin, which is not conceded, the polyisocyanate crosslinking agent of claim 24 is in component (II), and the amino resin crosslinking agent of claim 24 is in component (I). Therefore claim 24 does not recite the weight ratio of polyisocyanate and amino resin crosslinking agents to component (I).

For all of the foregoing reasons, all elements not taught by the references, even in combination, absence of motivation to combine the references, and no expectation of success in improving environmental etch resistance and rheology control in combining the references, Applicants respectfully submit that a *prima facie* case of obviousness has not been made. Claims 19, 24, and 27-28 are therefore believed to be patentable over Nienhaus in view of Ohrbom, and further in view of Blum. Accordingly, reconsideration and removal of this obviousness rejection of is requested.

#### **4. Response to Arguments**

The PTO alleges,

In response to applicant's arguments that there is no motivation to incorporate a third method of cure into the invention of Nienhaus, the skilled artisan would have a reasonable expectation of success to incorporate a third cure system, as there are no inherent incompatibilities between the systems. Nienhaus teaches a system curing via radiation and OH/NCO reaction and Ohrbom teaches a system that cures via OH/NCO reaction and carbamate/amino [resin] reaction. If both the systems are compatible with a polyurethane type cure, they should be compatible with each other.

Applicants appreciate the detailed basis of rejection, but must respectfully disagree. First, Ohrbom does not teach a system that cures via an OH/NCO reaction. As discussed in the

foregoing section, the reaction is between OH and a blocked polyisocyanate, i.e. an OH/NHC(O)O reaction.

Second, the PTO's assertion that there are no incompatibilities is a conclusion reached by a hindsight reading of the Applicant's own disclosure.

In applying §103(a), the U.S. Court of Appeals for the Federal Circuit has consistently held that one must consider both the invention and the prior art "as a whole", not from improper hindsight gained from consideration of the claimed invention. See, *Interconnect Planning Corp. v. Feil*, 227 U.S.P.Q. 543, 551 (Fed. Cir. 1985) and cases cited therein. According to the *Interconnect* court:

[n]ot only must the claimed invention as a whole be evaluated, but so also must the references as a whole, so that their teachings are applied in the context of their significance to a technician at the time – a technician without our knowledge of the solution.

Emphasis added.

The combination of elements in the claims is implicitly held novel by the PTO based on the absence of any §102 rejections. The formulation of coatings compositions is an unpredictable art. If not, the large amount of research and development, including end use application testing, that is carried out by coatings companies when making coating composition changes would not be necessary. Therefore there is no direct support in any of the cited references, nor in the knowledge of the skilled person in the art at the time the invention was made, that the constituents are compatible, and that the constituents can be successfully combined, short of the teaching of the Applicants' own disclosure.

Moreover, the assertion that there are no incompatibilities between the constituents does not *per se* provide motivation for combining them. It is not *prima facie* obvious to combine constituents based only on the belief that they are compatible, or that they can be combined. The PTO appears to be arguing that combining the constituents is obvious to try.

According to MPEP § 2141, I., however:

The admonition that "obvious to try" is not the standard under § 103 has

been directed mainly at two kinds of error. . . . In others, what was “obvious to try” was to explore a new technology or general approach that seemed to be a promising field of experimentation, where the prior art gave only general guidance as to the particular form of the claimed invention or how to achieve it.” *In re O’Farrell*, 853 F.2d 894, 903, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988) (citations omitted)

At best, Ohrbom provides motivation to use of carbamate/amino resin curing in other 1K systems in which ether linkages are formed between hydroxyl groups and amino resins, and in which there is limited or no curing at lower temperatures. Ohrbom does not provide motivation or any expectation of advantage in employing carbamate/amino resin curing in a low temperature cure 2K system employing OH/NCO chemistry and UV curing chemistry taught by Nienhaus.

The PTO alleges “Additionally, Ohrbom teaches that the carbamate/amino [resin] cure system provides rheology control and environmental etch resistance in systems curing also through crosslinking of hydroxyl groups with polyisocyanate crosslinkers (2:5-10 Ohrbom).” Applicants respectfully disagree with the PTO’s interpretation of the cited passage.

A reading of what Ohrbom fairly suggests in its entirety is crosslinking of hydroxyl groups with blocked polyisocyanate groups, not free polyisocyanates. The need for “rheology control” as disclosed in the cited passage applies only to systems with blocked polyisocyanates (¶ 4):

Difficulties with controlling rheology have been a problem particularly with coatings compositions that are cured using blocked polyisocyanates as crosslinkers. Although coatings compositions using polyisocyanate crosslinkers are highly preferred for the excellent appearance and durability of the films they produce, such systems must usually be heated to temperature of 290°F (143°C) and higher in order to deblock the polyisocyanate and thereby initiate cure. At these temperatures, the tendency of the low molecular weight principal resins to flow is increased. Thus, the coating composition flows more than is desirable before there is sufficient crosslinking to set up the coating film. The excessive flow leads to the appearance problems in the cured coating mentioned above.

In a system crosslinked via OH/NCO chemistry, on the other hand, high temperatures are not required, and rheology control is not an issue. The advantage of rheology control taught by Ohrbom is not necessary for systems crosslinked by OH/NCO like those of Nienhaus.

The PTO further alleges,

In response to applicant's arguments that Ohrbom is drawn to blocked polyisocyanate systems, while this may be true, both Ohrbom and Nienhaus are drawn to thermal cure systems, specifically those curing via a hydroxy/isocyanate reaction. The fact that curing agents may be blocked has no effect on the cure mechanism, only its initiation.

Applicants must respectfully disagree. The reaction of hydroxyl groups with blocked polyisocyanates must proceed by a different mechanism than the reaction of hydroxy groups with polyisocyanates. Hydroxyl groups react with polyisocyanates by a direct addition reaction of O-H with the N=C double bond of NCO. In the reaction with blocked isocyanates, on the other hand, at least two different mechanisms, each with at least two steps, are possible. First, the blocked polyisocyanate may deblock to regenerate free isocyanate, which then undergoes the addition reaction with O-H. However direct nucleophilic attack on the carbamate group of the blocked isocyanate to form a tetrahedral intermediate, followed by loss of the blocking group is also possible. Although the end result, a urethane linkage, is the same, the mechanisms are different from each other, and also different from the one-step addition of OH to NCO. Moreover, the reactions take place at different temperatures as discussed in a foregoing section.

The PTO also alleges,

The benefit of Ohrbom is to "resolve the problem of excessive flow during initial stages of thermal curing" (§0008). It is not necessary to incorporate the blocked polyisocyanates of Ohrbom into Nienhaus as well.

Applicants agree with the PTO that it is not necessary to incorporate the blocked polyisocyanates of Ohrbom into Nienhaus. In fact, Applicants have argued above that there is no motivation to combine the teachings of Ohrbom and Nienhaus at all. Moreover, the PTO is selectively choosing only elements from Ohrbom that will support its position.

"[I]t is impermissible within the framework of § 103 to pick and choose from any one



reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art.” *In re Wesslau*, 353 F.2d 238, 241, 147 U.S.P.Q. 391, 393 (C.C.P.A. 1965); *see also Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc.*, 796 F.2d 443, 448-49, 230 U.S.P.Q. 416, 420 (Fed. Cir. 1986)

Ohrbom employs carbamate-functional resins and aminoplast crosslinking agents in part because of the high temperature cure requirements of blocked isocyanates, and because of the resulting excessive flow. Omission of the blocked isocyanates from a coating composition removes this motivation for using the carbamate-functional resins and aminoplast crosslinking agents.

Moreover, Applicants have shown above that the problem of excessive flow during initial stages of thermal curing is not present in the compositions of Nienhaus. There can be no motivation to look for a solution to a non-existent problem (excessive flow during curing), and thereby be motivated to combine the carbamate-functional resins and aminoplast crosslinking agents of Ohrbom with the composition of Nienhaus.

## CONCLUSION

Applicant(s) respectfully submit that the Application and pending claims are patentable in view of the foregoing amendments and/or remarks. A Notice of Allowance is respectfully requested. As always, the Examiner is encouraged to contact the Undersigned by telephone if direct conversation would be helpful.

Respectfully Submitted,

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